Social and Economic Assessment for Michigan's State Forests

Prepared for: Michigan Department of Natural Resources
Forest, Mineral, and Fire Management Division

Lansing, Michigan

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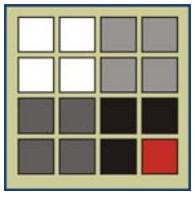

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Preface

Public Act 125 of 2004, Section 52505, requires the Michigan Department of Natural Resources (MiDNR) to seek and maintain third-party sustainable forestry certification. Forest certification requires that MiDNR forest management plans take into consideration social and economic parameters that affect future forest management operations. Currently, the MiDNR is preparing a statewide forest management plan, and each of three eco-teams are drafting ecoregional management plans. The social and economic information provided in this report will be used to assess current social and economic conditions and to develop future management directions within each of the plans.

The report focuses primarily on three ecoregions: the Western Upper Peninsula, Eastern Upper Peninsula, and Northern Lower Peninsula as defined by the MIDNR along county boundaries. It covers social and economic conditions within these ecoregions in aggregate and on a county-level basis. As a result data for the areas in and around Michigan state forests are highlighted.

The "Social and Economic Assessment for the Michigan National Forests" (July 25, 2003), by Larry Leefers, Karen Potter-Witter, and Maureen McDonough from Michigan State University, provides a general model for this report.

The assessment report is based on secondary data. No primary data collection was done. MiDNR personnel provided unpublished data from MiDNR records. The report presents analyses of existing data and discusses relationships and trends in the variables of interest, and contains some projections based on existing literature.

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All omissions and errors are the sole responsibility of the Authors.

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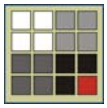

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Chapter 2. Demographic Patterns and Trends in Michigan

Introduction

Demographers use statistical data to study human populations, especially their size and density, distribution and vital statistics. The U.S. Department of Commerce's Census Bureau is the principal source of demographic data in the United States; the data is based on its decennial survey and supplementary surveys. Many of these data are available from the Census Bureau website (http://www.census.gov/). Other agencies, such as the U.S. Department of Labor's Bureau of Labor Statistics (BLS) and the U.S. Department of Commerce's Bureau of Economic Analysis (BEA), also collect data related to people's employment, industry characteristics and other economic activity. Special studies conducted by universities and consultants may provide regional or local data of interest, but generally are not as comprehensive as census data.

The purpose of this section is to examine various demographic patterns and trends related to the Michigan Department of Natural Resources' ecoregions and to the state forests of Michigan. These demographic factors include overall population, components of population change, age class distribution, sex, ethnicity, location, proximity to ecoregions and state forests, density, educational achievement, dependency, and housing (both permanent and seasonal). In total, demographic information for Michigan yields insights into the structure of the population and how it has changed. These changes, in turn, have implications for resource management.

The Michigan Society of Planning Officials published a series of 11 working papers in the mid-1990s as part of its Trend Future Project—one focused on demographic trends (Wyckoff and Reed 1995). Their analysis indicated that the most important population changes in recent decades were:

- Michigan's population growth has slowed.
- Areas on the fringe of Michigan's largest cities are increasing in population along with some rural areas in the northern Lower Peninsula (NLP).
- The population is aging.
- Households have increased, but household size has declined.
- Income levels have increased, but not as fast as poverty rates.
- Education levels have risen, but local and regional disparities exist.

Though these conclusions were based on 1990 and earlier census data, the 2000 Census supports the general findings. In this chapter, we supplement information on broad patterns or trends by providing further analysis of demographic conditions within the ecoregions and in close proximity to state forests. As a result, broad and local conditions relevant for resource management can be considered in ecoregional planning.

Population Trends

Total population and Population change

Michigan's population has increased at a fairly steady rate since achieving statehood in 1837 (Figure 2.1, Appendix Table A2.1). In 1840, there were just over 200,000 people; the population increased to almost 10 million people by 2000. Post-World War II population growth surged in Michigan with well over 1 million people added each decade for 1950-1970. The 1980 census showed a slowing of Michigan's growth, and by 1990 growth had almost stopped. The 2000 census reported a resurgence in population growth with an increase of over 640,000 people compared to the 1990 total. The SLP has almost 9 million of the 10 million Michigan residents. In recent decades, population growth has occurred in the NLP, but the EUP and WUP have been relatively stagnant in terms of population growth (Figure 2.2). The WUP was 2.4% of the state's population in 2000—the percentage has been declining for 90 years (Appendix Table A2.2). The NLP, in contrast, accounted for 7.5% of Michigan's population in 2000 and continues as a growth area.

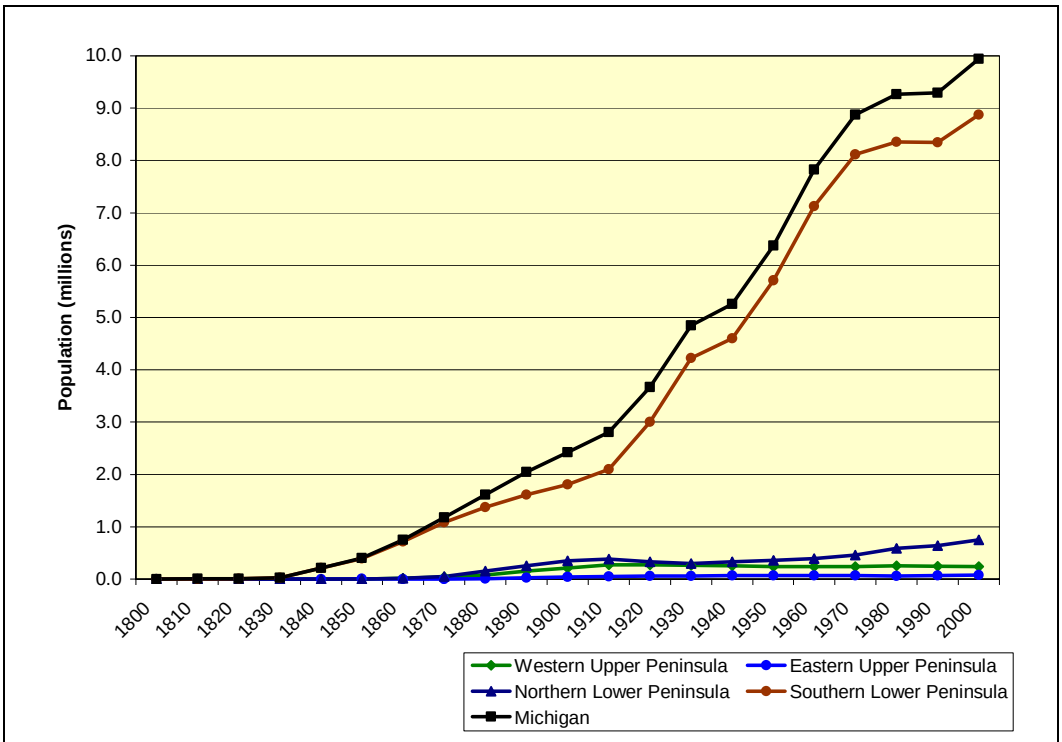
Population trends in the United States, Michigan, and in the ecoregions demonstrate a wide array of changes over the past three censuses. From 1980 to 2000, total U.S. resident population increased 24.2% (54.9 million people) due to steady natural population growth (births minus deaths) and positive net international migration (Table 2.1). Population growth in Michigan was much lower at 7.3% (676 thousand people). However, the NLP is growing slightly faster, in percentage terms, than the US, and the EUP is growing faster than the state. The WUP has experienced a population decline; there were 15,000 fewer people in 2000 than in 1980. The 1990 and 2000 census data show an increasing prison population. These population increases contribute to higher populations in northern Michigan. This is especially true for the EUP where prison population accounted for 9% of the total population in 2000.

Growth varied widely across Michigan (Figure 2.3). Population declines were most striking in Wayne County, the Flint-Saginaw-Bay City corridor, and in many WUP counties. The WUP experienced negative population growth from 1980-2000. Seven counties lost population from 1980-2000—Delta, Gogebic, Houghton, Iron, Marquette, Menominee, and Ontonagon counties. Dickinson County was the only WUP county to experience growth in both decades; overall population in the Michigan counties remained fairly constant from 1990-2000. The large decrease in Marquette County's population from 1990-2000 was due, in part, to the 1995 closing of K.I. Sawyer Air Force Base. All counties in the EUP experienced population growth during the 1990-2000 period, though the total population was still below 80,000. Mackinac and Chippewa counties led the population growth in the EUP.

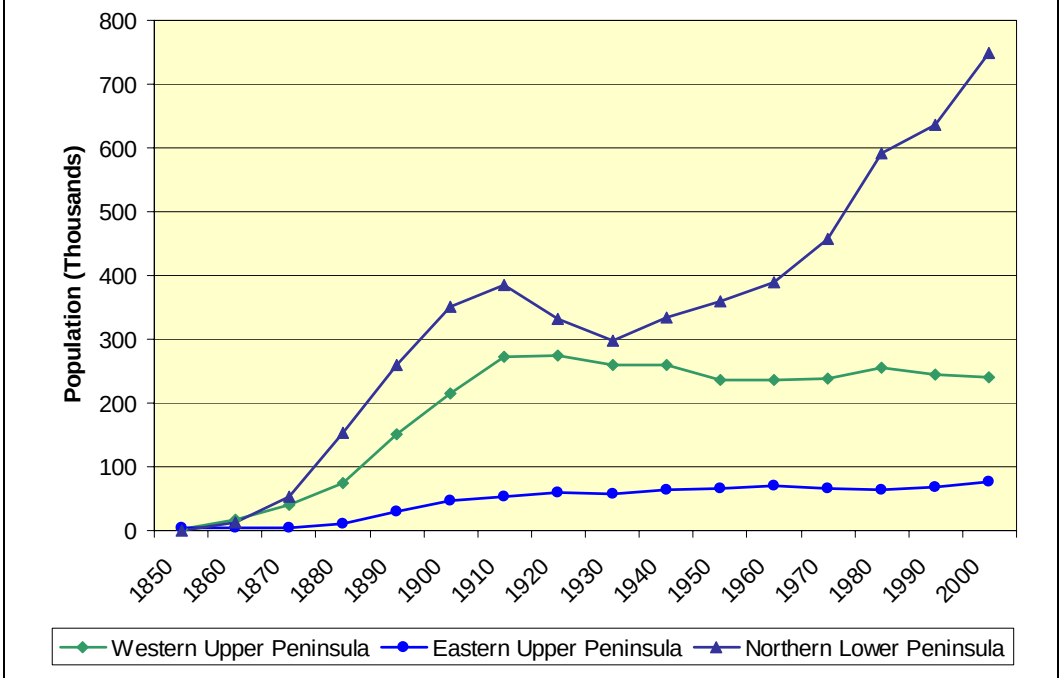
Table 2.1. Total population in the United States, Michigan, and ecoregion areas (1980, 1990, and 2000) and percentage change in population.

	Total population			Population change		
Impact area	**1980**	**1990**	**2000**	**1980-1990**	**1990-2000**	**1980-2000**
	thousands			**thousands / percent**		
Western Upper Peninsula	256.1	245.6	241.3	-10.5 -4.1%	-4.3 -1.7%	-14.8 -5.8%
Eastern Upper Peninsula	63.7	68.3	76.3	4.6 7.3%	8.0 11.7%	12.6 19.8%
Northern Lower Peninsula	718.3	766.8	896.0	48.5 6.8%	129.2 16.8%	177.7 24.7%
Michigan	9,262.1	9,295.3	9,938.4	33.2 0.4%	643.1 6.9%	676.4 7.3%
United States	226,545.8	248,709.9	281,421.9	22,164.1 9.8%	32,712.0 13.2%	54,876.1 24.2%

Data Source: Census, 1980 - 2000



Source: Census, 1790 – 2000



Source: Census, 1790 – 2000

Figure 2.1. Total population, Michigan and ecoregions, 1790-2000

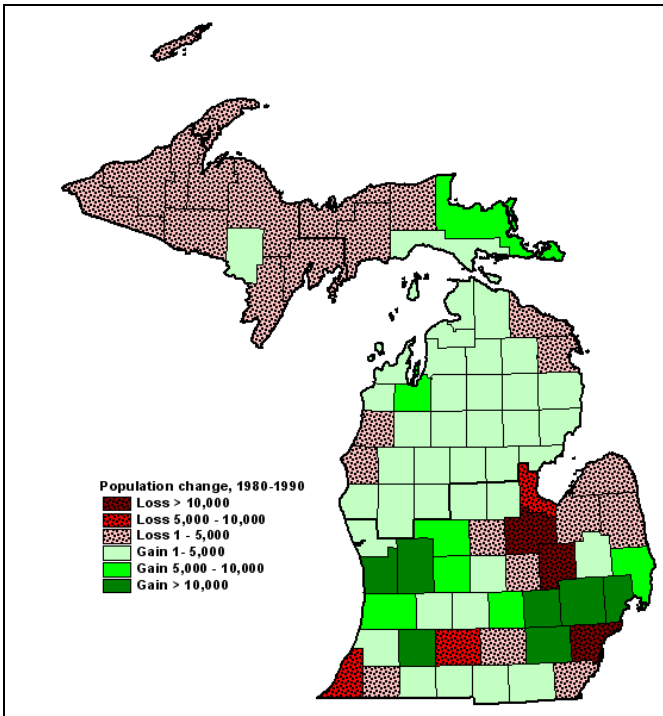


Figure 2.2a. Ten-year population change (counts), 1980 to 1990

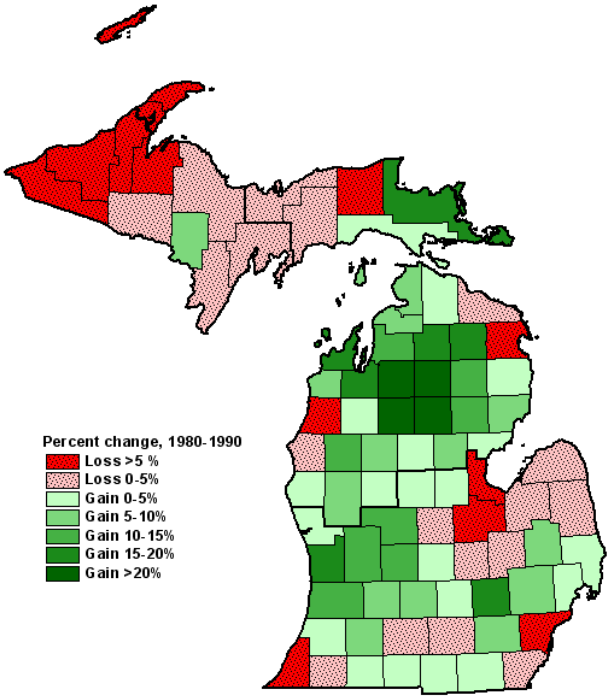
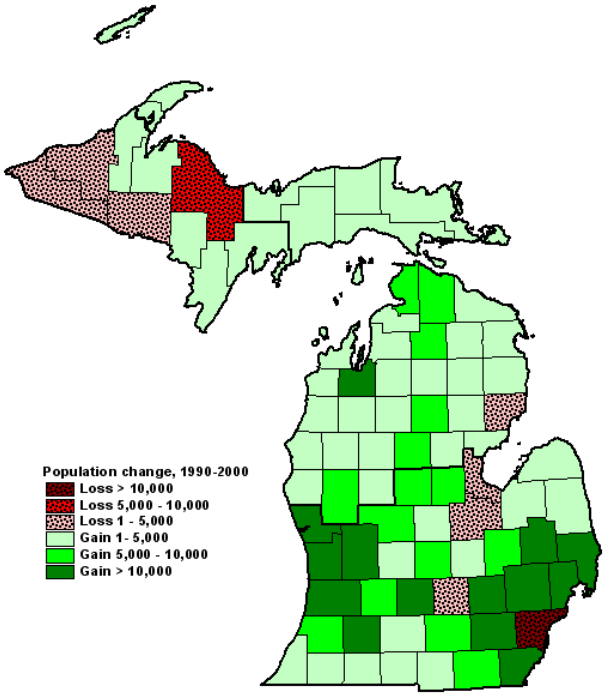


Figure 2.2b. Ten-year population change (percent), 1980 to 1990



Data Source: US Census, 1980 - 2000

Figure 2.2c. Ten-year population change (counts), 1990 to 2000

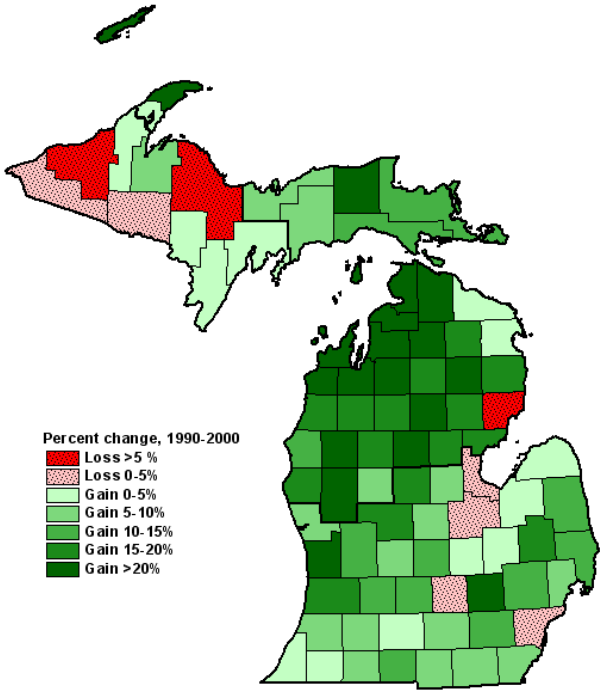


Figure 2.2d. Ten-year population change (percent), 1990 to 2000

Data Source: US Census, 1980 - 2000

Figure 2.3. Population change by county, 1980-1990 and 1990-2000.

Double digit percentage population growth is most notable in the NLP. Increases were greatest in the central NLP along the I-75 corridor—Roscommon, Crawford, and Otsego counties increased over 50% during the 1980-2000 period. The Frankfort-Traverse City-Petosky-Cheboygan areas also showed significant growth. Iosco County was the only NLP county that had negative growth from 1990 to 2000. This was due largely to closure of the Wurtsmith Air Force Base in 1993. Alpena County population also declined over the 20 year period. The largest population increases from 1980 to 2000 were in Grand Traverse and Newaygo counties.

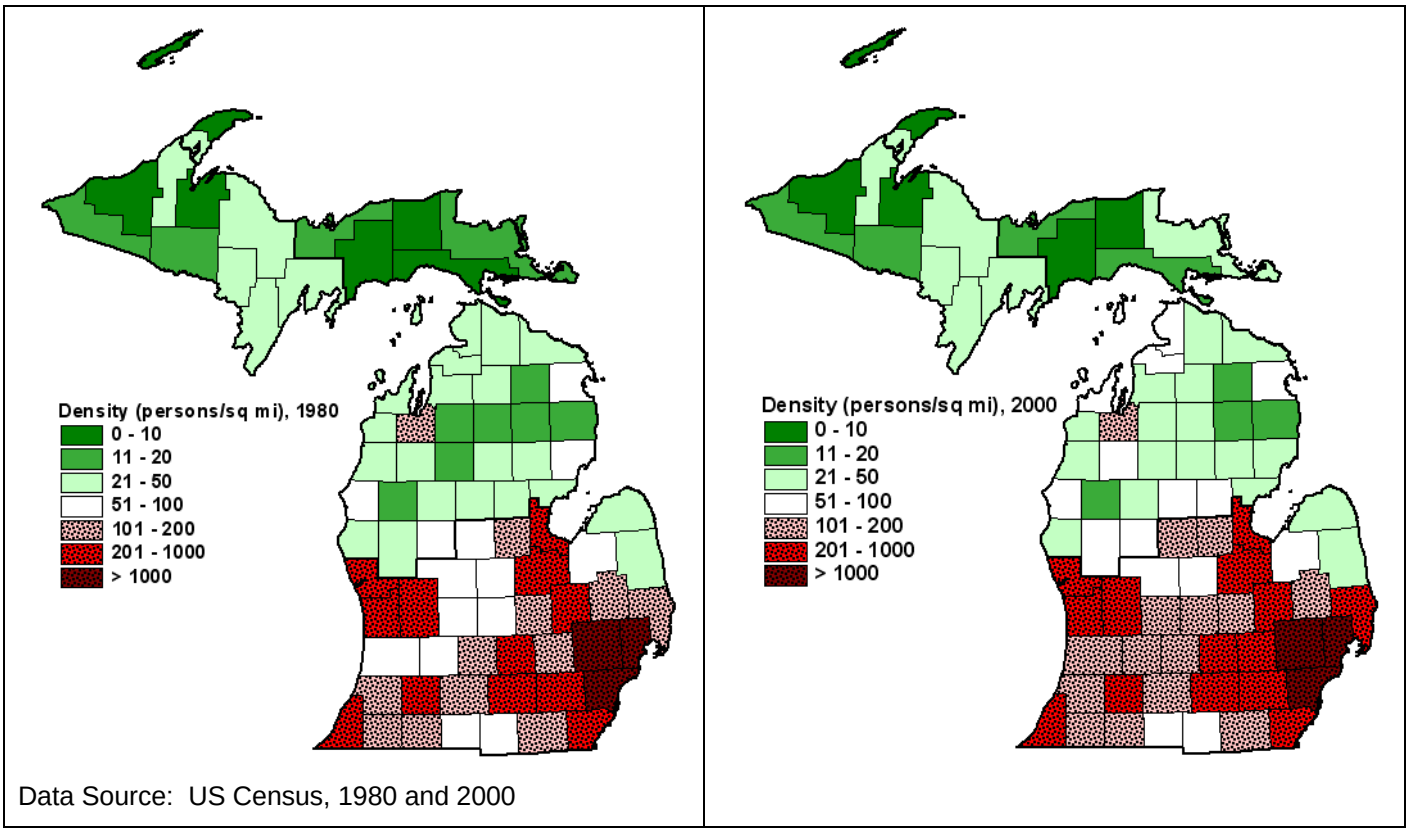
Population densities

Michigan's population is concentrated in the SLP (Figure 2.1). Of the 20 Michigan counties with populations over 100,000 people in 2000, none are in the WUP, EUP or NLP. Five are near the southern edge of the NLP: Kent, Ottawa, and Muskegon counties on the west side, and Bay and Saginaw counties on the east side. Population densities are likewise low in the more sparsely populated ecoregions (Table 2.2, Figure 2.4). The population density for Michigan is about 175 people per square mile. The NLP has the highest population density of the four areas—46 people per square mile. Twenty-five of 44 northern Michigan counties have population densities of 40 or fewer people per square mile. Five counties—Baraga, Keweenaw, Luce, Ontonagon, and Schoolcraft—have fewer than 10 persons per square mile. Over time, population density has increased in many counties in the SLP and NLP, especially.

Table 2.2. Total population, land area, and population density in the United States, Michigan, the Western Upper Peninsula, the Eastern Upper Peninsula, and the Northern Lower Peninsula, 2000.

Impact area	Population	Land Area	Population Density
	Number	Sq. Mi.	People/Sq. Mi.
Western Upper Peninsula	241,341	10,837	22.3
Eastern Upper Peninsula	76,275	5,582	13.7
Northern Lower Peninsula	749,768	16,185	46.3
Michigan	9,938,444	56,804	175.0
United States	281,421,906	3,536,338	79.6

Data Source: US Census, 2000



Data Source: US Census, 1980 and 2000

Figure 2.4. Population density by county, 1980 and 2000 (persons per square mile.)

Proximity of population to state forests

Population patterns in Michigan lead to two distinct situations with respect to U.S. resident population within close proximity of state forests (Appendix Figures A2.1, A2.2, and A2.3; Table 2.3). To approximate one- and two-hour driving times, zones were developed from the centroid of state forests in the WUP, EUP and NLP. One hour from a county to the closest state forest is roughly approximated by the 120 mile buffer, and two hours is approximated by the 180 mile buffer. County populations were totaled within each buffer. Counties were adjusted based on the Lake Michigan barrier. Canadian population data were not included. WUP state forests have approximately one million U.S. residents living within an hour of their borders. The majority of these persons live in Wisconsin. About 600 thousand people live within an hour of EUP state forests, but this excludes over 75,000 people living in the Sault Ste. Marie, Ontario census agglomeration in close proximity to the EUP (based on Statistics Canada data). The NLP has nearly five times the number of persons as the EUP state forests within 120 miles of the centroid—2.9 million people. As this zone is increased to two hours (180 miles from the centroid), totals increase by three-fold. Approximately 29% and 93% of Michigan's population are within one or two hours from the NLP state forests, respectively.

Table 2.3. Estimate of population near state forest lands for 2000.

Cumulative Distance from Centroid	60 miles	120 miles	180 miles
Western Upper Peninsula			
Michigan	248,902	279,073	448,002
Wisconsin	79,529	687,855	1,867,978
Sum	328,431	966,928	2,315,980
Eastern Upper Peninsula			

Cumulative Distance from Centroid	60 miles	120 miles	180 miles
Michigan	198,770	573,686	1,323,766
Wisconsin			140,465
Sum	198,770	573,686	1,464,231
Northern Lower Peninsula			
Michigan	594,861	2,942,199	9,239,927
Wisconsin			48,472
Sum	594,861	2,942,199	9,288,399

Data Source: MiDNR, Census Bureau

Components of population change

The Census Bureau reports population based on census surveys every 10 years. It also estimates annual changes in population using three major components: natural change in population (births-deaths), net international migration, and net internal migration (origin and destination within the United States). The numeric population change is statistically derived, so the sum of the three components does not equal the numeric population change. Nonetheless, these estimates provide insights regarding the components of population growth and decline (Table 2.4). The 1990-1999 data is the closest available to the 1990-2000 period (Table 2.1), but is one year short.

Researchers have classified most northern Michigan counties as “recreation counties” due to economic ties to recreation, tourism and seasonal housing (Johnson and Beale 2002). Over 90 percent of nonmetropolitan counties associated with recreation grew in population during the 1990-2000 period. Counties in the west central Upper Peninsula—Baraga, Delta, Dickinson, Houghton, Marquette, and Menominee—did not meet the classification criteria and were not classified as recreation counties. The NLP counties of Alpena, Newaygo, and Wexford were not classified as recreation counties either. In most cases, non-tourism related economic activity led to these classifications. Population change in recreation counties is based generally on net migration into the area rather than natural population changes; this is clearly the case for the EUP and NLP. That is, net internal or domestic migration greatly exceeded natural change. In some parts of the country, recreation county growth is specifically associated with casinos (Johnson and Beale 2002). Their role is less clear in Michigan—some counties with casinos grew more slowly than counties without them.

Natural change in population was negative for the 1990-1999 reporting period for the WUP (i.e., deaths exceeded births). For the WUP, only Delta and Dickinson counties had positive natural population increases. Twenty-two of 30 NLP counties had positive natural growth. The NLP’s natural change and large net migration totaled over 84,000 additional people in the 1990-1999 period.

Johnson and others (2005) used a nationwide analysis of age-specific net migration data to identify “net migration signatures” for different classes of counties. They identified the NLP as one of a handful of in-migration “hot spots” in the country during the 1990s, especially for those aged 40-44, perhaps reflecting the beginnings of amenity migration (migration due to the attractiveness or amenities an area offers). This has been driven in recent years by “baby boomer” retirements. If age-specific migration can be linked with recreation activities, public facilities, and other community infrastructure, then social impacts of net migration can be assessed more readily.

Table 2.4. Births, deaths and, net migration by ecoregion, 1990-1999

Ecoregion	Births	Deaths	Natural change (Births-Deaths)	Net international migration	Net internal migra-tion	Numeric population change
	1990 – 1999 Number of persons					
Western Upper Peninsula	24,952	25,021	-69	219	-8,762	-8,811
Eastern Upper Peninsula	7,473	6,461	1,012	263	5,208	6,317
Northern Lower Peninsula	78,450	66,145	12,305	927	72,854	84,713
Michigan	1,287,572	763,166	524,406	99,735	-199,465	568,488
United States	39,846,350	22,539,652	17,306,698	8,308,976		30,194,352

Data Source: Census Bureau

Population age, structure, sex and dependency

In Michigan, the percentage of females (51%) and males (49%) mirrors the national distribution (Table 2.5). There are slightly more males than females in the WUP and NLP, and the EUP has considerably more males than females. The proportions vary by age with males exceeding females until they reach the mid-60s in the EUP and WUP (Appendix Table A2.3). In the NLP, male population exceeds female population until the mid-30s. Thereafter, female cohorts (or groups) are larger and the gap expands as age increases. The United States and Michigan have very similar patterns—children from 0-4 years old exceed the number of seniors over the age of 75. In Michigan, the 5-14, 15-24, 25-34, and 45-54 age classes are relatively equal. The largest population is in the 35-44 year old class—they reflect the end of the baby boom (children born from 1946 to 1964). On a percentage basis, older persons comprise a larger proportion of the population in northern Michigan than in the state as a whole (Figure 2.5).

The “baby boom echo” is most pronounced in the NLP and WUP—children of “baby boomers” have increased the 5-14 year old, school-age population. Overall, the ratio of 0-4 to 5-14 year old children is lower for the impact areas (0.41-0.42) than it is for Michigan (0.45); this decline will be reflected in less state tax money being spent in school districts with declining enrollments (Appendix Table A.2.3). The cohort patterns for younger residents are similar for the WUP and EUP; population is higher in the 15-24 year old cohort than in those immediately younger or older, especially in the number of males. In the NLP, the 5-14 year old cohort is the largest for young residents; population declines from the 5-14 through the 25-34 year old groups.

Table 2.5. Population by sex and total for ecoregions, Michigan and the United States

Impact area	Year	Male	Female	Male	Female	Total
		Number		Percent		Number
Western Upper Peninsula	1980	129,262	126,829	50%	50%	256,091
	1990	123,063	122,537	50%	50%	245,600
	2000	121,679	119,662	50%	50%	241,341
Eastern Upper Peninsula	1980	31,867	31,799	50%	50%	63,666
	1990	35,936	32,379	53%	47%	68,315
	2000	41,073	35,202	54%	46%	76,275
Northern Lower Peninsula	1980	290,760	299,833	49%	51%	590,593
	1990	312,938	323,585	49%	51%	636,523
	2000	372,513	377,255	50%	50%	749,768

Impact area	Year	Male	Female	Male	Female	Total
		Number		Percent		Number
Michigan	1980	4,516,189	4,745,889	49%	51%	9,262,078
	1990	4,511,601	4,783,696	49%	51%	9,295,297
	2000	4,873,095	5,065,349	49%	51%	9,938,444
United States	1980	110,053,161	116,492,644	49%	51%	226,545,805
	1990	121,172,379	127,537,494	49%	51%	248,709,873
	2000	138,053,563	143,368,343	49%	51%	281,421,906

Data Source: US Census, 1980, 1990, and 2000

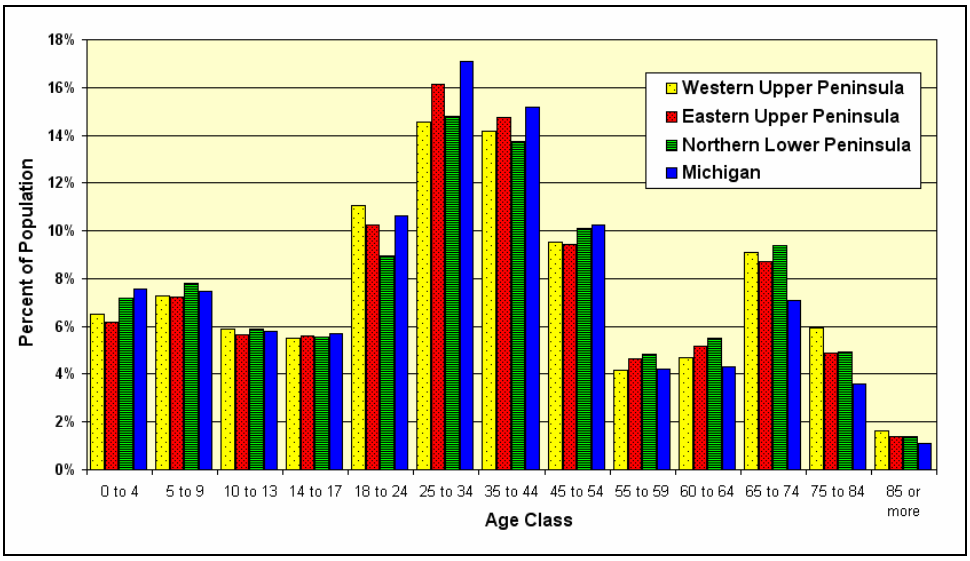


Figure 2.5. Age cohorts, in percent, by sex in Michigan and ecoregions, 2000

For older residents, a larger proportion of people are 75 and older in northern Michigan than they are on average in the state (Appendix Table A2.4). The statewide percentage is under 5%, but the ecoregions range from 6.3-7.6%. Dependent residents, those under 18 or 65 years old and older, comprise 38.4% of the Michigan population, and between 36.6-40.9% of the populations in northern Michigan ecoregions (Appendix Table A2.5). Provisions for social services and infrastructure (e.g., schools, hospitals, etc.) are related to these demographic groups. Relative to the United States and Michigan, the youth component is a much smaller proportion than the senior component in northern Michigan—indicating an aging population in these more rural areas. On a percentage basis, northern Michigan counties account for 28 of the top 30 Michigan counties in terms of dependent residents (Appendix Table A2.6).

Ethnic/racial composition

Ethnicity and race are defined as separate concepts by the federal government (Hobbs and Stoops 2002). People of a specific ethnic origin may be of any race, and people of a specific race may be of any ethnic origin. Race, as presented in this chapter, covers the following five groups: White, Black or African American, American Indian and Alaska Native, Asian and Pacific Islander, and Multiple Races. Persons of Hispanic origin are defined for federal statistical purposes as another group and may be of any race.

The 2000 percentage of non-white population in Michigan was 19.8% (Table 2.6, Appendix Tables A2.7 and A2.8). For the WUP and the NLP, the total non-white percentage of population was 4.8% and 4.1%, respectively— however, the EUP had 13.8%. The EUP had a higher percentage of Native Americans than the other reported areas. Hence, the impact areas are not as diverse as the United States or Michigan, but Native

American populations are higher than average in several locations—exceeding 10% in Baraga, Chippewa, Mackinac, and Schoolcraft counties.

Table 2.6. Racial and ethnic composition of population by impact area, 1980, 1990, and 2000.

Impact Area	Year	American Indian or Alaska Native	Asian or Pacific Islander	African American or Black	Multiple Races	White	Total Population
		Persons					
Western Upper Peninsula	1980	2,604	771	1,607	703	250,406	256,091
	1990	3,949	1,438	1,651	387	238,175	245,600
	2000	4,373	1,403	2,253	3,553	229,759	241,341
Eastern Upper Peninsula	1980	4,093	103	427	129	58,914	63,666
	1990	6,724	200	2,377	133	58,881	68,315
	2000	8,087	326	3,427	3,252	61,183	76,275
Northern Lower Peninsula	1980	3,999	1,228	4,067	2,549	578,750	590,593
	1990	6,559	1,999	4,604	2,833	620,528	636,523
	2000	7,719	2,681	5,957	14,346	719,065	749,768
Michigan	1980	39,714	57,126	1,199,023	93,974	7,872,241	9,262,078
	1990	58,934	102,869	1,289,012	85,241	7,759,241	9,295,297
	2000	58,479	179,202	1,412,742	321,968	7,966,053	9,938,444
United States	1980	1,364,033	3,556,806	26,495,025	6,758,319	188,371,622	226,545,805
	1990	2,015,143	7,226,986	29,930,524	9,710,156	199,827,064	248,709,873
	2000	2,475,956	10,641,833	34,658,190	22,185,301	211,460,626	281,421,906

Data Source: US Census, 1980, 1990, and 2000

Racial populations are distributed unevenly across Michigan (Figure 2.6). The EUP and SLP have higher concentrations of non-white populations. Native Americans are concentrated more in the Upper Peninsula, and African Americans-Blacks are concentrated more in the SLP. Correctional facilities in the EUP contribute to the high Black-African American percentage in Alger and Luce counties (Appendix Table A2.9).

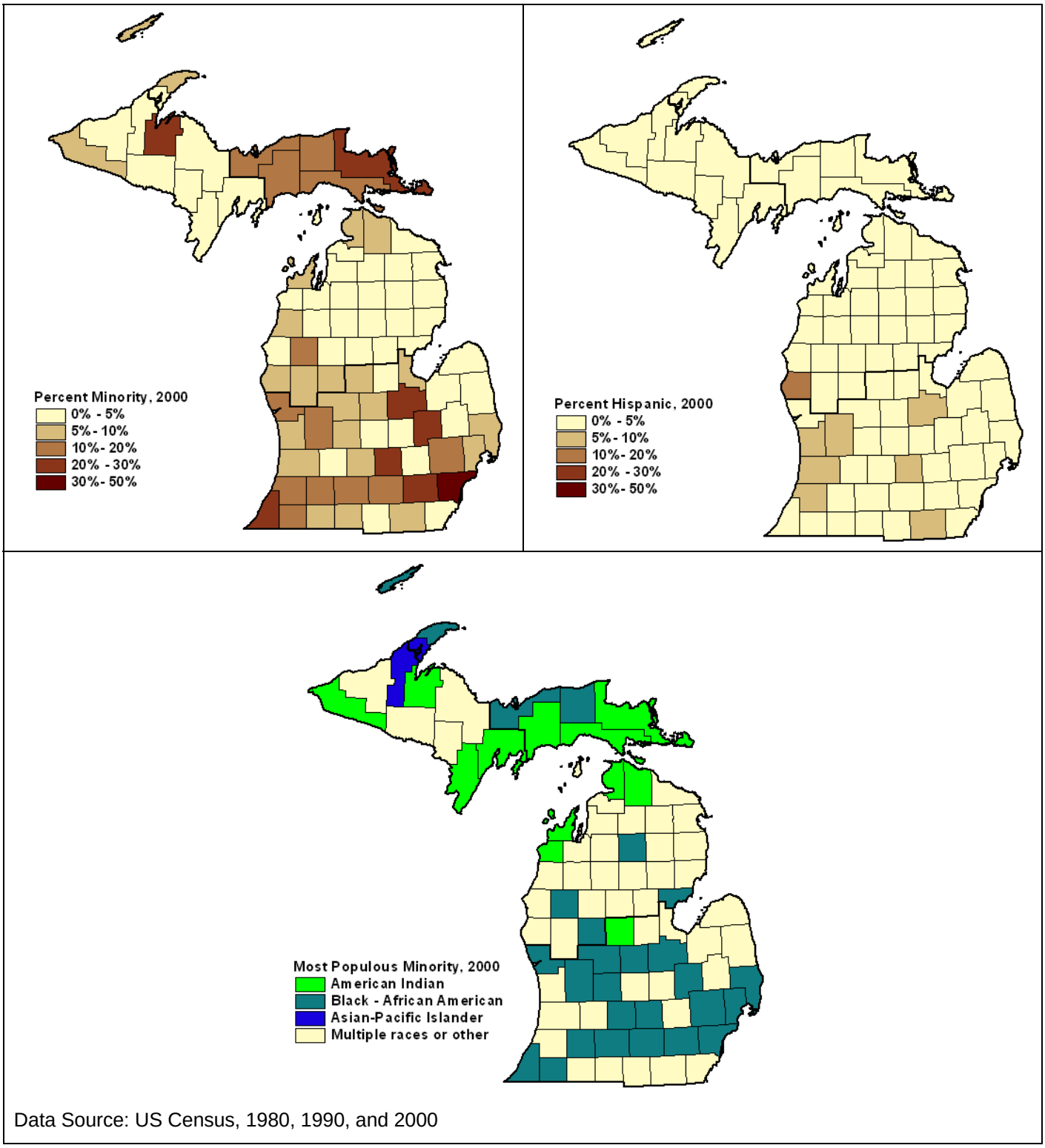


Figure 2.6. Percent of minority (non-white) and Hispanic population by county in Michigan, 2000

Educational achievement

Educational achievement is quantified in a number of ways (Appendix Table A2.10). It provides insights into educational accomplishments of a state, region or locality. One measure of achievement relates the proportion of people between 16 and 19 years of age who are not enrolled in school and who have not graduated from high school to the total population. The Michigan average for this metric was 8.7% in 2000—any level above this demonstrates poorer performance than the state average. All WUP counties have percentages below the state average indicating better performance. For the EUP, three of five counties exceed this level (i.e., have rates higher than 8.7%), with Luce County the highest at 18.3%. Fourteen of 30 counties in the NLP also exceed the state average with Lake County at 25.1%.

Another measure of educational achievement is the percentage of the population from 18 to 24 years old who are enrolled in college; these are the leading years for attending college. The Michigan average is 36.7% of people at these ages are enrolled in college. Only three impact counties have higher percentages enrolled in college: Chippewa (Lake Superior State University), Houghton (Michigan Technological University); Marquette (Northern Michigan University), and Mecosta (Ferris State University). Houghton County (73.8%) and Mecosta County (71.5%) had the highest Michigan county percentages of 18 to 24 years old enrolled in college in 2000.

For the population 25 years and older in Michigan, approximately 5% have less than a 9th grade education—four of 15 Upper Peninsula counties have lower percentages of the population with more than a 9th grade education. That is, these counties have a higher level of educational attainment with this metric than the state as a whole. For the NLP, 11 of 30 counties are better than the statewide average.

Statewide, over 83% of the population 25 years and older are high school graduates or higher—most of the WUP counties exceed this level (the exception is Baraga), whereas none of the EUP counties do. Only seven of 30 NLP counties exceed the state average. Delta, Marquette, and Otsego County also surpass the state average. Houghton and Marquette Counties are the only Upper Peninsula counties exceeding the state average for percentage of population with a bachelor's degree or higher. Emmet, Grand Traverse and Leelanau exceed the state average in the NLP.

In summary, for most educational metrics, northern Michigan ecoregions and counties fall below average performance in the state. Counties with strong links to universities fare better than others.

Housing

Housing units and seasonal homes

The number of housing units by minor civil division (MCD, generally townships) highlights the concentration of housing in the SLP (Figure 2.7). This is associated with concentration of Michigan's population. In the Upper Peninsula, MCDs located in and around Ironwood, Iron River, Iron Mountain-Kingsford, Houghton-Hancock, Escanaba, Marquette, and Sault Ste. Marie have the greatest concentration of housing units. Similarly, areas in and around towns in the NLP have the heaviest concentration of housing. The preponderance of seasonal homes is reflected in the number of housing units per person. The areas with the largest number of units per person are concentrated in the three northern ecoregions.

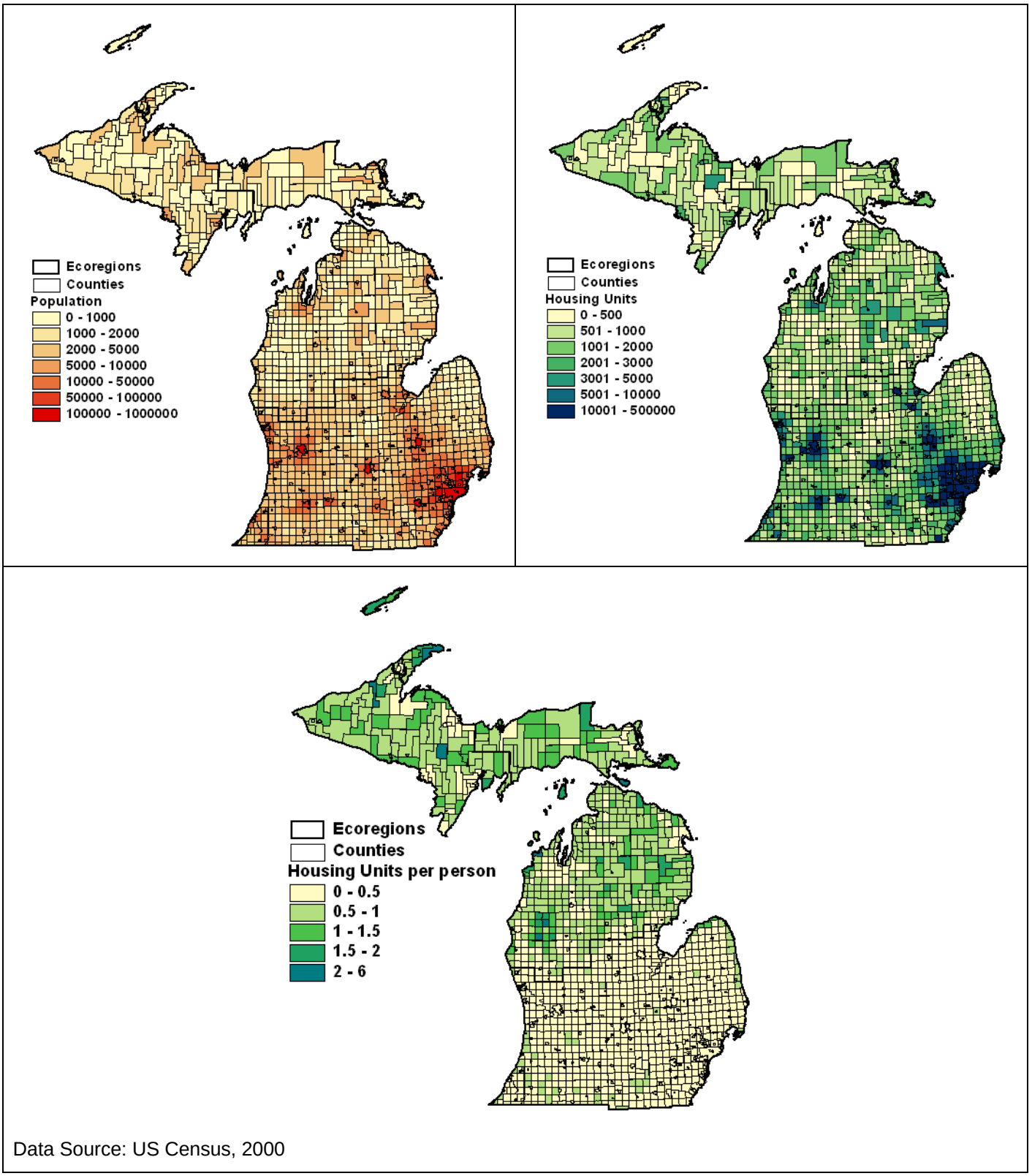


Figure 2.7. Total population, housing units, and housing units per person, by minor civil division, 2000

In 2000, the WUP had the highest percentage of owner-occupied housing units (58.0%) followed by the NLP (53.2%), and the EUP (49.5%) (Table 2.7). These percentages are below the statewide average of 66.0%. The totals likely would be higher, but census data are tallied in April before the influx of summer residents. This would lead to lower April figures. The number of housing units increased for all northern Michigan ecoregions from 1990 to 2000, with a significant increase in the NLP. The number of seasonal homes increased from 1990 to 2000 in the NLP, but remained fairly static for the WUP and EUP. The WUP has a much lower concentration of seasonal homes than the EUP and NLP (Figure 2.8). Several counties had seasonal homes comprising more than 40% of the total housing units in the county.

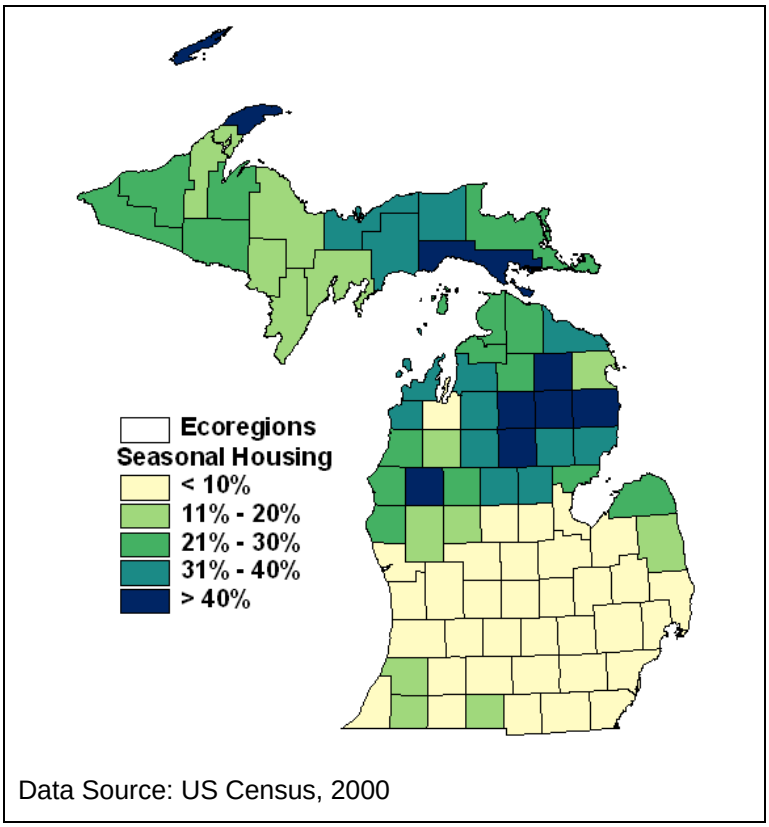
Table 2.7. Total housing units by Michigan and ecoregion, 1990 and 2000

Impact Area	Year	Total Housing Units	Owner-Occupied Housing Units		Seasonal Homes	
		Number	Number	Percent	Number	Percent
Western Upper Peninsula	1990	123,993	68,947	55.6%	21,029	17.0%
	2000	129,162	74,958	58.0%	21,463	16.6%
Eastern Upper Peninsula	1990	42,133	18,606	44.2%	13,654	32.4%
	2000	44,515	22,049	49.5%	13,538	30.4%
Northern Lower Peninsula	1990	400,268	188,380	47.1%	131,836	32.9%
	2000	457,546	243,540	53.2%	136,167	29.8%
Michigan	1990	3,847,926	2,427,472	63.1%	224,030	5.8%
	2000	4,234,279	2,793,124	66.0%	233,922	5.5%

Data Source: US Census, 1990 and 2000

Seasonal homeowners and users participate in a variety of outdoor recreation activities, especially those associated with water; hiking and sightseeing were the most common land-based activities (Stynes et al. 1997).Seasonal homeowners provide a significant influx of money to northern Michigan counties throughout the year. Of course, seasonal homes vary in size and value—some are expensive lakefront homes while others are small rustic cabins on relatively secluded forest parcels. Stynes and others (1997) found that seasonal home use was concentrated in the summer (55%), and less use occurs in the fall (21%), spring (15%), and winter (9%). Of seasonal home users they surveyed, sightseeing, bicycling, hiking, and tennis were more likely to take place on public lands and parks (Stynes et al. 1997). However, many activities (e.g., fishing, swimming, boating, nature study, riding ORVs, etc.) also took place, in part, on public lands and waters.

Conversion of some seasonal homes to permanent homes is occurring, and this may be reflected in only slight increases of seasonal homes in the WUP and EUP between 1990 and 2000. Stynes and others (1997) found that approximately 20% of seasonal homeowners said they were “likely” or “very likely” to convert their seasonal residence to a permanent home within 5 years—this increased to almost 30% when the timeframe was extended. A slightly larger percentage of second homeowners on the Upper Manistee River area indicated they would convert their seasonal home to a permanent home within the next five years (Valentine 2003).



Data Source: US Census, 2000

Figure 2.8. Seasonal homes as a percent of housing units, 2000

Selected studies on fragmentation and parcelization of land

Researchers at the North Central Research Station and the University of Wisconsin-Madison mapped housing density across the United States (Stewart et al. 2003). Their objective was to determine where housing development has occurred over the past six decades and to highlight the leading edge of development. Their key findings were:

- In 1940, housing density was high in urban areas and very low in rural areas.
- By 2000, low and middle density housing areas were common across the landscape.
- Housing density growth in rural areas was rapid during the 1970s and the 1990s.
- Throughout the six-decade period, growth occurred in suburban and exurban areas, but there was also low-density growth in rural areas with natural amenities, such as the upper Great Lakes region (Stewart et al. 2003).

One hypothesis is that housing patterns drive landscape change by transforming land cover, vegetation, and wildlife habitat. This and other hypotheses can be tested as more spatial data becomes available. Several studies have explored the relationship between development and forested land. The studies have increased in scope and complexity as technology has evolved and data has become more available.

Several researchers have begun exploring landscape-level change. One study particularly relevant to northern Michigan explored the relationship between parcels, forest cover and fragmentation in northern Michigan for 1970 and 1990 (Drzyzga and Brown 2002). They focused on Grand Traverse, Kalkaska, and Crawford counties in the NLP. During the 1970-1990 period, average parcel size declined from 24 acres to 10 acres for the 3-county area. Forested private land increased over time. Using Traverse City as a developed core, they found that parcel size increased and forest fragmentation decreased with distance from town. They noted that parcelization was more

likely to threaten the forest products industry than loss of forests. As parcel size declines, harvesting is less likely to occur and more owners must be contacted to meet a mills wood requirements.

Across the Lake States, forest cover increased more rapidly on low-density residential lands and in counties with a heavier concentration of seasonal homes during the 1970-1990 period (Brown 2003, Brown 2004). As with the three-county Michigan study, forested land was expanding in all areas, regardless of county classification as High Growth Residential, High Growth Recreational, Low Growth or Medium Growth. The greatest increases in developed land use came in high growth and medium growth counties—these are associated with low density housing. Agricultural land declined in all counties, but this was also a source of increased forest land. Low Growth counties were the most remote and the most likely to have extractive (e.g., forest industry) economies.

A longer term analysis of the U.S. Midwest examined the relation between housing and forest fragmentation (Radeloff et al. 2005). They found that housing growth was strongest at the fringe of urban areas (suburbs) and in rural areas associated with lakes and forests. Sprawl or rural development is pervasive throughout the Midwest region and most forests include or are near housing. Michigan and Indiana had the greatest rural sprawl in the Midwest. The environmental effects per house are expected to be larger in the rural areas, but the ecological effects of this housing distribution are not well understood. Public land ownership is one of the few barriers to long-term development, and it provides lands valuable for conservation efforts.

Finally, Brown and others (2005) looked at rural land-use trends across the conterminous U.S. from 1950-2000. From 1950-1970, the U.S. experienced growth in urban areas. In the 1970s, this trend was reversed and widespread population increases occurred in rural areas. After waning in the 1980s, there was a “rural rebound” in the 1990s that again focused growth in nonmetropolitan areas. Smaller household size, agricultural abandonment and amenity-driven development have contributed to sprawl. Ecological consequences of these trends need further study. Drivers of land use and land cover change were beyond the scope of Brown and others. However, demographic and other driving factors of land-use change are currently being explored at Michigan State University’s Land Policy Institute (www.landpolicy.msu.edu).

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Social and Economic Assessment for Michigan's State Forests

APPENDIX

Prepared for: Michigan Department of Natural Resources
Forest, Mineral, and Fire Management Division

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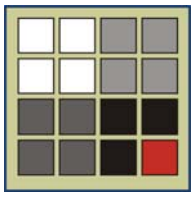

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Chapter 1. Introduction

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Chapter 2. Demographic Patterns and Trends in Michigan

Table A2.1. Total population, Michigan and eco-regions, 1790-2000

Year	Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula	Southern Lower Peninsula	Michigan	United States
	persons					
1790						3,929,214
1800		551		3,206	3,757	5,308,483
1810		615		4,147	4,762	7,239,881
1820		819		6,633	7,452	9,638,453
1830		1,503		26,501	28,004	12,860,702
1840		1,457	496	210,314	212,267	17,063,353
1850	1,233	4,512	903	391,006	397,654	23,191,876
1860	17,795	3,619	13,425	713,299	748,138	31,443,321
1870	39,496	4,204	53,894	1,080,391	1,177,985	38,558,371
1880	75,305	9,725	152,866	1,374,350	1,612,246	50,189,209
1890	151,163	29,360	259,705	1,610,647	2,050,875	62,979,766
1900	215,581	45,781	351,673	1,807,947	2,420,982	76,212,168
1910	271,547	54,081	385,609	2,098,936	2,810,173	92,228,496
1920	273,603	58,953	332,837	3,003,019	3,668,412	106,021,537
1930	260,540	58,136	297,318	4,226,331	4,842,325	123,202,624
1940	259,185	64,359	334,343	4,598,219	5,256,106	132,164,569
1950	236,463	65,795	358,788	5,710,720	6,371,766	151,325,798
1960	236,414	69,538	390,260	7,126,982	7,823,194	179,323,175
1970	238,692	65,655	457,534	8,113,202	8,875,083	203,302,031
1980	256,091	63,666	590,593	8,351,728	9,262,078	226,542,199
1990	245,600	68,315	636,523	8,344,859	9,295,297	248,709,873
2000	241,341	76,275	749,768	8,871,060	9,938,444	281,421,906

Data Source: US Census, 1790 – 2000.

Table A2.1. Percentage of total Michigan population, by eco-region, 1800-2000

Year	Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula	Southern Lower Peninsula
	Percent of State population			
1800		14.7%		85.3%
1810		12.9%		87.1%
1820		11.0%		89.0%
1830		5.4%		94.6%
1840		0.7%	0.2%	99.1%
1850	0.3%	1.1%	0.2%	98.3%
1860	2.4%	0.5%	1.8%	95.3%
1870	3.4%	0.4%	4.6%	91.7%
1880	4.7%	0.6%	9.5%	85.2%
1890	7.4%	1.4%	12.7%	78.5%
1900	8.9%	1.9%	14.5%	74.7%
1910	9.7%	1.9%	13.7%	74.7%
1920	7.5%	1.6%	9.1%	81.9%
1930	5.4%	1.2%	6.1%	87.3%
1940	4.9%	1.2%	6.4%	87.5%
1950	3.7%	1.0%	5.6%	89.6%
1960	3.0%	0.9%	5.0%	91.1%
1970	2.7%	0.7%	5.2%	91.4%
1980	2.8%	0.7%	6.4%	90.2%
1990	2.6%	0.7%	6.8%	89.8%
2000	2.4%	0.8%	7.5%	89.3%

Table A2.2. Population and percentage population change by U.S. Michigan, and eco-region for 1800, 1850, 1900. 1950, 1960, 1970, 1980, 1990 and 2000

Year	Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula	Southern Lower Peninsula	Michigan	United States
	Total Population					
1800		551		3,206	3,757	5,308,483
1850	1,233	4,512	903	391,006	397,654	23,191,876
1900	215,581	45,781	351,673	1,807,947	2,420,982	76,212,168
1950	236,463	65,795	358,788	5,710,720	6,371,766	151,325,798
1960	236,414	69,538	390,260	7,126,982	7,823,194	179,323,175
1970	238,692	65,655	457,534	8,113,202	8,875,083	203,302,031
1980	256,091	63,666	590,593	8,351,728	9,262,078	226,542,199
1990	245,600	68,315	636,523	8,344,859	9,295,297	248,709,873
2000	241,341	76,275	749,768	8,871,060	9,938,444	281,421,906
	Percent Change (10-year)					
1800						35.1%
1850		209.7%	82.1%	85.9%	87.3%	35.9%
1900	42.6%	55.9%	35.4%	12.2%	18.0%	21.0%
1950	-8.8%	2.2%	7.3%	24.2%	21.2%	14.5%
1960	0.0%	5.7%	8.8%	24.8%	22.8%	18.5%
1970	1.0%	-5.6%	17.2%	13.8%	13.4%	13.4%
1980	7.3%	-3.0%	29.1%	2.9%	4.4%	11.4%
1990	-4.1%	7.3%	7.8%	-0.1%	0.4%	9.8%
2000	-1.7%	11.7%	17.8%	6.3%	6.9%	13.2%

Data Source: US Census, 1790 – 2000.

Table A2.3. Age cohorts by eco-region and sex, 2000.

Age Cohort	EUP		NLP		WUP	
	Female	Male	Female	Male	Female	Male
0to4	1956	1986	21076	22160	6125	6486
5to14	4572	4739	51547	54883	14974	15763
15to24	4495	5917	43667	47971	16495	20071
25to34	3803	6301	40126	40788	12080	13573
35to44	5242	7200	57480	56673	17803	18264
45to54	4879	5840	52456	52413	16754	18128
55to64	3863	3989	43368	42338	11865	11911
65to74	3221	3061	35219	33729	10432	9424
75to84	2288	1633	23399	17479	9123	6204
85Plus	883	407	8917	4079	4011	1855

Data Source: US Census, 2000.

Table A2.4. Age cohorts, in percent, by sex in Michigan and eco-regions, 2000

Age class (years)	Michigan	Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula
0 to 4	7.6%	6.5%	6.2%	7.2%
5 to 9	7.5%	7.3%	7.2%	7.8%
10 to 13	5.8%	5.9%	5.7%	5.9%
14 to 17	5.7%	5.5%	5.6%	5.6%
18 to 24	10.7%	11.0%	10.2%	8.9%
25 to 34	17.1%	14.6%	16.2%	14.8%
35 to 44	15.2%	14.2%	14.8%	13.8%
45 to 54	10.2%	9.5%	9.4%	10.1%
55 to 59	4.2%	4.2%	4.6%	4.8%
60 to 64	4.3%	4.7%	5.2%	5.5%
65 to 74	7.1%	9.1%	8.7%	9.4%
75 to 84	3.6%	6.0%	4.9%	4.9%
85 or more	1.1%	1.6%	1.4%	1.4%

Table A2.5. People 17 years old and younger, 65 years old and older and percent dependent in the United States and Michigan and by eco-region, 2000

Impact Area	Year	Population	0 to 17 years	65 Plus	Dependent
		Number	Number	Number	Percent
Western Upper Peninsula	1980	256,091	70,436	35,982	41.6%
	1990	245,600	61,759	40,995	41.8%
	2000	241,341	54,184	41,049	39.5%
Eastern Upper Peninsula	1980	63,666	18,319	8,566	42.2%
	1990	68,315	16,852	10,235	39.7%
	2000	76,275	16,422	11,493	36.6%
Northern Lower Peninsula	1980	590,593	172,958	79,552	42.8%
	1990	636,523	168,149	99,678	42.1%
	2000	749,768	184,102	122,822	40.9%
Michigan	1980	9,262,078	2,751,986	912,258	39.6%
	1990	9,295,297	2,461,723	1,107,018	38.4%
	2000	9,938,444	2,595,767	1,219,018	38.4%
United States	1980	226,545,805	63,754,960	25,549,427	39.4%
	1990	248,709,873	63,606,544	31,195,275	38.1%
	2000	281,421,906	72,293,812	34,991,753	38.1%

Data Source: US Census, 1980, 1990, and 2000

Table A2.6. Dependency by county, percentage of residents under 18 or 65 years old or older in Michigan, 2000

Rank	County/State	Impact Area	Total Dependent	Children	Seniors
			Percent	Percent	Percent
1	Iron, MI	WUP	45.8%	20.6%	25.2%
2	Montmorency, MI	NLP	44.2%	20.3%	23.9%
3	Iosco, MI	NLP	44.0%	22.4%	21.6%
4	Roscommon, MI	NLP	43.8%	20.0%	23.8%
5	Huron, MI	SLP	43.7%	24.2%	19.4%
6	Oscoda, MI	NLP	43.5%	23.3%	20.2%
7	Alcona, MI	NLP	43.5%	19.0%	24.5%
8	Presque Isle, MI	NLP	43.3%	20.9%	22.3%
9	Dickinson, MI	WUP	43.2%	25.1%	18.1%
10	Gogebic, MI	WUP	43.1%	20.4%	22.6%
11	Keweenaw, MI	WUP	42.8%	22.5%	20.3%
12	Sanilac, MI	SLP	42.3%	26.9%	15.4%
13	Ogemaw, MI	NLP	42.3%	23.5%	18.8%
14	Oceana, MI	NLP	42.2%	28.2%	14.0%
15	Missaukee, MI	NLP	41.9%	27.1%	14.8%
16	Newaygo, MI	NLP	41.9%	29.1%	12.8%
17	Antrim, MI	NLP	41.8%	24.4%	17.5%
18	Leelanau, MI	NLP	41.8%	24.4%	17.4%
19	Ontonagon, MI	WUP	41.8%	20.2%	21.6%
20	Clare, MI	NLP	41.7%	24.4%	17.3%
21	Cheboygan, MI	NLP	41.6%	23.7%	17.9%
22	Lake, MI	NLP	41.6%	21.9%	19.7%
23	Gladwin, MI	NLP	41.6%	23.2%	18.3%
24	Schoolcraft, MI	EUP	41.3%	22.8%	18.6%
25	Osceola, MI	NLP	41.3%	27.1%	14.2%
26	Menominee, MI	WUP	41.3%	24.0%	17.3%
27	Crawford, MI	NLP	41.1%	24.5%	16.6%
28	Mason, MI	NLP	41.0%	24.2%	16.8%
29	Benzie, MI	NLP	40.9%	23.4%	17.5%
30	Charlevoix, MI	NLP	40.8%	25.9%	14.9%
31	Wexford, MI	NLP	40.8%	26.8%	14.0%
32	Delta, MI	WUP	40.8%	23.8%	17.0%
33	Alpena, MI	NLP	40.8%	23.7%	17.1%
34	Manistee, MI	NLP	40.7%	22.6%	18.1%
35	Otsego, MI	NLP	40.5%	26.8%	13.7%
36	St. Joseph, MI	SLP	40.5%	27.5%	13.0%
37	Berrien, MI	SLP	40.5%	26.0%	14.4%
38	Mackinac, MI	EUP	40.4%	22.2%	18.2%
39	Muskegon, MI	SLP	40.4%	27.5%	12.9%
40	Van Buren, MI	SLP	40.4%	28.1%	12.3%

Rank	County/State	Impact Area	Total Dependent	Children	Seniors
			Percent	Percent	Percent
41	Wayne, MI	SLP	40.1%	28.0%	12.1%
42	Saginaw, MI	SLP	40.1%	26.6%	13.5%
43	Allegan, MI	SLP	40.0%	28.9%	11.1%
44	Arenac, MI	NLP	39.9%	23.3%	16.6%
45	Calhoun, MI	SLP	39.6%	26.0%	13.7%
46	Emmet, MI	NLP	39.6%	25.3%	14.3%
47	Hillsdale, MI	SLP	39.6%	26.3%	13.3%
48	Tuscola, MI	SLP	39.6%	26.8%	12.8%
49	Kalkaska, MI	NLP	39.3%	25.6%	13.7%
50	Baraga, MI	WUP	39.2%	22.9%	16.3%
51	Montcalm, MI	SLP	39.2%	27.1%	12.1%
52	Bay, MI	SLP	39.1%	24.5%	14.7%
53	Cass, MI	SLP	39.1%	25.5%	13.6%
54	Genesee, MI	SLP	39.0%	27.4%	11.6%
55	St. Clair, MI	SLP	39.0%	26.8%	12.2%
56	Barry, MI	SLP	39.0%	27.2%	11.8%
57	Clinton, MI	SLP	39.0%	28.1%	10.9%
58	Midland, MI	SLP	38.9%	26.9%	12.0%
59	Ottawa, MI	SLP	38.8%	28.7%	10.1%
60	Shiawassee, MI	SLP	38.8%	26.8%	12.0%
61	Branch, MI	SLP	38.7%	25.5%	13.1%
62	Kent, MI	SLP	38.6%	28.3%	10.4%
63	Lenawee, MI	SLP	38.6%	25.9%	12.7%
64	Monroe, MI	SLP	38.5%	27.4%	11.1%
65	Jackson, MI	SLP	38.5%	25.6%	12.9%
66	Grand Traverse, MI	NLP	38.5%	25.4%	13.1%
	Michigan	State	38.4%	26.1%	12.3%
	United States	US	38.1%	25.7%	12.4%
67	Macomb, MI	SLP	37.7%	24.1%	13.7%
68	Alger, MI	EUP	37.7%	20.5%	17.2%
69	Lapeer, MI	SLP	37.5%	28.0%	9.6%
70	Eaton, MI	SLP	37.5%	26.1%	11.3%
71	Houghton, MI	WUP	37.3%	21.8%	15.5%
72	Gratiot, MI	SLP	37.3%	23.8%	13.5%
73	Livingston, MI	SLP	37.1%	28.8%	8.3%
74	Ionia, MI	SLP	36.9%	26.9%	10.0%
75	Luce, MI	EUP	36.8%	21.4%	15.4%
76	Oakland, MI	SLP	36.5%	25.2%	11.3%
77	Mecosta, MI	NLP	35.7%	22.5%	13.2%
78	Kalamazoo, MI	SLP	35.4%	24.1%	11.4%
79	Marquette, MI	WUP	34.9%	21.4%	13.5%
80	Chippewa, MI	EUP	34.0%	21.3%	12.7%
81	Ingham, MI	SLP	32.8%	23.4%	9.4%

Rank	County/State	Impact Area	Total Dependent	Children	Seniors
			Percent	Percent	Percent
82	Washtenaw, MI	SLP	30.2%	22.1%	8.1%
83	Isabella, MI	SLP	29.4%	20.3%	9.0%

Data Source: US Census, 2000

Table A2.7. Counties with more than 4 percent minority population in 2000.

AreaName	Most Populous Race	Minority	Hispanic	White	Black	American Indian	Asian-Pacific Islander	Multi-race
Western Upper Peninsula		Percent						
Baraga	American Indian	21.4	0.9	78.6	5.0	12.0	0.3	4.1
Gogebic	American Indian	5.8	0.9	94.2	1.8	2.2	0.2	1.6
Keweenaw	Black/African American	5.0	0.8	95.0	3.5	0.1	0.1	1.3
Marquette	Multiple Races/Other	4.9	0.7	95.1	1.3	1.5	0.5	1.6
Houghton	Asian-Pacific Islander	4.5	0.7	95.5	0.9	0.5	1.8	1.2
Delta	American Indian	4.2	0.5	95.8	0.1	2.2	0.3	1.5
Eastern Upper Peninsula								
Chippewa	American Indian	24.1	1.6	75.9	5.5	13.3	0.5	4.8
Mackinac	American Indian	19.9	0.9	80.1	0.2	14.2	0.3	5.2
Luce	Black/African American	17.2	1.8	82.8	7.5	5.5	0.4	3.7
Alger	Black/African American	12.2	1.0	87.8	6.1	3.3	0.4	2.4
Schoolcraft	American Indian	11.3	0.9	88.7	1.6	6.1	0.4	3.2
Northern Lower Peninsula								
Lake	Black/African American	15.3	1.7	84.7	11.2	1.0	0.2	3.0
Oceana	Multiple Races/Other	9.6	11.6	90.4	0.3	1.0	0.3	8.0
Mecosta	Black/African American	7.3	1.3	92.7	3.6	0.6	0.9	2.2
Leelanau	American Indian	6.5	3.3	93.5	0.2	3.7	0.3	2.3
Manistee	Multiple Races/Other	5.8	2.6	94.2	1.6	1.3	0.4	2.6
Emmet	American Indian	5.7	0.9	94.3	0.5	3.1	0.5	1.6
Cheboygan	American Indian	5.2	0.8	94.8	0.2	2.5	0.2	2.2
Newaygo	Multiple Races/Other	5.2	3.9	94.8	1.1	0.6	0.3	3.1
Arenac	Black/African American	4.6	1.4	95.4	1.8	0.9	0.3	1.5
Mason	Multiple Races/Other	4.2	3.0	95.8	0.7	0.8	0.3	2.4

Table A2.8. Percent by race and percent non-white in the United States, Michigan, and eco-region, 2000

Impact Area	Year	American Indian or Alaska Native	Asian or Pacific Islander	African American or Black	Multiple Races	White	Non-White
Western Upper Peninsula	1980	1.0%	0.3%	0.6%	0.3%	97.8%	2.2%
	1990	1.6%	0.6%	0.7%	0.2%	97.0%	3.0%
	2000	1.8%	0.6%	0.9%	1.5%	95.2%	4.8%
Eastern Upper Peninsula	1980	6.4%	0.2%	0.7%	0.2%	92.5%	7.5%
	1990	9.8%	0.3%	3.5%	0.2%	86.2%	13.8%
	2000	10.6%	0.4%	4.5%	4.3%	80.2%	19.8%
Northern Lower Peninsula	1980	0.7%	0.2%	0.7%	0.4%	98.0%	2.0%
	1990	1.0%	0.3%	0.7%	0.4%	97.5%	2.5%
	2000	1.0%	0.4%	0.8%	1.9%	95.9%	4.1%
Michigan	1980	0.4%	0.6%	12.9%	1.0%	85.0%	15.0%
	1990	0.6%	1.1%	13.9%	0.9%	83.5%	16.5%
	2000	0.6%	1.8%	14.2%	3.2%	80.2%	19.8%
United States	1980	0.6%	1.6%	11.7%	3.0%	83.1%	16.9%
	1990	0.8%	2.9%	12.0%	3.9%	80.3%	19.7%
	2000	0.9%	3.8%	12.3%	7.9%	75.1%	24.9%

Data Source: US Census, 1980, 1990, and 2000

Table A2.9. Total population, population of prisoners, and percent prisoners, 1990 and 2000

Ecoregion - county	Total Population		Prisoners		Percent Prisoners	
	1990	2000	1990	2000	1990	2000
Western Upper Peninsula						
Menominee, MI	24,920	25,326	15	33	0.1%	0.1%
Iron, MI	13,175	13,138	13	268	0.1%	2.0%
Dickinson, MI	26,831	27,472	28	64	0.1%	0.2%
Keweenaw, MI	1,701	2,301	0	4	0.0%	0.2%
Houghton, MI	35,446	36,016	23	286	0.1%	0.8%
Baraga, MI	7,954	8,746	104	608	1.3%	7.0%
Marquette, MI	70,887	64,634	926	1,206	1.3%	1.9%
Ontonagon, MI	8,854	7,818	16	15	0.2%	0.2%
Delta, MI	37,780	38,520	31	60	0.1%	0.2%
Gogebic, MI	18,052	17,370	340	454	1.9%	2.6%
WUP Total	245,600	241,341	1,496	2,998	0.6%	1.2%
Eastern Upper Peninsula						
Luce, MI	5,763	7,024	0	937	0.0%	13.3%
Alger, MI	8,972	9,862	359	845	4.0%	8.6%
Chippewa, MI	34,604	38,543	4,047	4,804	11.7%	12.5%
Schoolcraft, MI	8,302	8,903	6	228	0.1%	2.6%
Mackinac, MI	10,674	11,943	7	17	0.1%	0.1%
EUP Total	68,315	76,275	4,419	6,831	6.5%	9.0%
Northern Lower Peninsula						
Antrim, MI	18,185	23,110	26	48	0.1%	0.2%
Presque Isle, MI	13,743	14,411	8	17	0.1%	0.1%
Arenac, MI	14,931	17,269	29	567	0.2%	3.3%
Alpena, MI	30,605	31,314	50	70	0.2%	0.2%
Montmorency, MI	8,936	10,315	0	0	0.0%	0.0%
Wexford, MI	26,360	30,484	41	41	0.2%	0.1%
Oceana, MI	22,454	26,873	49	55	0.2%	0.2%
Roscommon, MI	19,776	25,469	49	80	0.2%	0.3%
Benzie, MI	12,200	15,998	22	39	0.2%	0.2%
Otsego, MI	17,957	23,301	34	36	0.2%	0.2%
Oscoda, MI	7,842	9,418	0	0	0.0%	0.0%
Mason, MI	25,537	28,274	144	197	0.6%	0.7%
Ogemaw, MI	18,681	21,645	39	47	0.2%	0.2%
Mecosta, MI	37,308	40,553	61	8	0.2%	0.0%
Osceola, MI	20,146	23,197	27	91	0.1%	0.4%
Crawford, MI	12,260	14,273	445	295	3.6%	2.1%
Emmet, MI	25,040	31,437	195	202	0.8%	0.6%
Newaygo, MI	38,202	47,874	40	192	0.1%	0.4%
Lake, MI	8,583	11,333	22	178	0.3%	1.6%
Cheboygan, MI	21,398	26,448	22	74	0.1%	0.3%
Iosco, MI	30,209	27,339	58	45	0.2%	0.2%

Clare, MI	24,952	31,252	52	175	0.2%	0.6%
Manistee, MI	21,265	24,527	89	756	0.4%	3.1%
Missaukee, MI	12,147	14,478	8	23	0.1%	0.2%
Kalkaska, MI	13,497	16,571	36	47	0.3%	0.3%
Charlevoix, MI	21,468	26,090	18	30	0.1%	0.1%
Gladwin, MI	21,896	26,023	49	62	0.2%	0.2%
Leelanau, MI	16,527	21,119	22	20	0.1%	0.1%
Grand Traverse, MI	64,273	77,654	324	262	0.5%	0.3%
Alcona, MI	10,145	11,719	13	33	0.1%	0.3%
NLP Total	636,523	749,768	1,972	3,690	0.3%	0.5%
Southern Lower Peninsula						
Huron, MI	34,951	36,079	64	62	0.2%	0.2%
Bay, MI	111,723	110,157	185	179	0.2%	0.2%
Isabella, MI	54,624	63,351	30	162	0.1%	0.3%
Ionia, MI	57,024	61,518	4,803	5,247	8.4%	8.5%
St. Clair, MI	145,607	164,235	178	246	0.1%	0.1%
Saginaw, MI	211,946	210,039	309	1,803	0.1%	0.9%
Ottawa, MI	187,768	238,314	205	282	0.1%	0.1%
Oakland, MI	1,083,592	1,194,156	1,297	2,035	0.1%	0.2%
Muskegon, MI	158,983	170,200	2,894	3,932	1.8%	2.3%
Sanilac, MI	39,928	44,547	40	90	0.1%	0.2%
Lenawee, MI	91,476	98,890	1,145	2,393	1.3%	2.4%
Shiawassee, MI	69,770	71,687	123	155	0.2%	0.2%
Jackson, MI	149,756	158,422	7,065	7,270	4.7%	4.6%
Kalamazoo, MI	223,411	238,603	649	562	0.3%	0.2%
Kent, MI	500,631	574,335	1,201	1,428	0.2%	0.2%
Macomb, MI	717,400	788,149	1,093	2,492	0.2%	0.3%
Lapeer, MI	74,768	87,904	699	1,080	0.9%	1.2%
Livingston, MI	115,645	156,951	347	413	0.3%	0.3%
Montcalm, MI	53,059	61,266	1,711	2,299	3.2%	3.8%
Monroe, MI	133,600	145,945	127	231	0.1%	0.2%
Calhoun, MI	135,982	137,985	191	686	0.1%	0.5%
Hillsdale, MI	43,431	46,527	0	61	0.0%	0.1%
Allegan, MI	90,509	105,665	603	170	0.7%	0.2%
Gratiot, MI	38,982	42,285	548	3,066	1.4%	7.3%
Genesee, MI	430,459	436,141	693	716	0.2%	0.2%
Berrien, MI	161,378	162,453	351	446	0.2%	0.3%
Eaton, MI	92,879	103,655	98	217	0.1%	0.2%
St. Joseph, MI	58,913	62,422	221	223	0.4%	0.4%
Clinton, MI	57,883	64,753	16	152	0.0%	0.2%
Ingham, MI	281,912	279,320	554	472	0.2%	0.2%
Cass, MI	49,477	51,104	63	138	0.1%	0.3%
Barry, MI	50,057	56,755	53	65	0.1%	0.1%
Midland, MI	75,651	82,874	72	85	0.1%	0.1%
Wayne, MI	2,111,687	2,061,162	3,411	6,874	0.2%	0.3%

Washtenaw, MI	282,937	322,895	2,914	3,262	1.0%	1.0%
Van Buren, MI	70,060	76,263	77	106	0.1%	0.1%
Tuscola, MI	55,498	58,266	338	334	0.6%	0.6%
Branch, MI	41,502	45,787	952	2,377	2.3%	5.2%
SLP Total	8,344,859	8,871,060	35,320	51,811	0.4%	0.6%
Michigan	9,295,297	9,938,444	43,207	65,330	0.5%	0.7%

Data source: US Census, SF1 files, 1990 and 2000

Table A2.10. Educational enrollment and educational achievement by county and eco-region, 2000

Impact Area	County	Not enrolled in school and not HS graduate	Enrolled in college or graduate school	Less than ninth grade education	HS graduate or higher	BA/BS degree or higher	BA/BS degree or higher
		16-19 years		18-24 years	25 years or older		25 to 34 year
Western Upper Peninsula	Baraga	8.5%	14.0%	6.5%	80.6%	10.9%	10.8%
	Delta	3.7%	34.4%	4.8%	86.1%	17.1%	19.3%
	Dickinson	4.6%	18.2%	3.0%	88.8%	16.7%	19.6%
	Gogebic	7.8%	26.2%	4.5%	85.5%	15.8%	14.3%
	Houghton	3.9%	73.8%	5.2%	84.6%	23.0%	28.0%
	Iron	3.3%	11.6%	4.2%	84.8%	13.7%	12.9%
	Keweenaw	5.3%	17.4%	5.7%	83.7%	19.1%	14.2%
	Marquette	3.4%	59.0%	3.7%	88.5%	23.7%	25.3%
	Menominee	4.9%	22.5%	5.8%	83.5%	11.0%	12.1%
	Ontonagon	7.5%	18.0%	6.4%	83.8%	13.0%	14.3%
Eastern Upper Peninsula	Alger	5.7%	13.3%	6.0%	81.5%	14.7%	14.5%
	Chippewa	8.2%	44.6%	5.1%	82.4%	15.0%	15.8%
	Luce	18.3%	10.0%	7.6%	75.5%	11.8%	8.6%
	Mackinac	11.5%	14.8%	5.6%	82.5%	14.9%	14.4%
	Schoolcraft	10.4%	11.3%	5.7%	79.4%	11.3%	11.1%
Northern Lower Peninsula	Alcona	10.5%	14.8%	5.6%	79.7%	10.9%	5.9%
	Alpena	5.7%	31.0%	7.4%	83.1%	13.2%	15.0%
	Antrim	7.7%	16.0%	3.3%	84.6%	19.4%	15.3%
	Arenac	10.4%	19.0%	7.6%	76.8%	9.1%	10.4%
	Benzie	6.6%	18.6%	3.5%	85.4%	20.0%	19.5%
	Charlevoix	6.7%	15.4%	3.9%	86.0%	19.8%	18.7%
	Cheboygan	7.5%	13.8%	5.6%	81.9%	13.9%	14.3%
	Clare	9.7%	18.6%	6.4%	76.1%	8.8%	10.1%
	Crawford	6.6%	16.6%	4.4%	80.8%	12.9%	13.1%
	Emmet	7.2%	28.0%	3.1%	89.0%	26.2%	25.0%
	Gladwin	12.2%	17.5%	6.8%	78.3%	9.2%	12.5%
	Grand Traverse	8.1%	28.9%	2.9%	89.3%	26.1%	24.8%
	Iosco	11.3%	14.1%	5.3%	77.9%	11.3%	12.1%
	Kalkaska	13.4%	12.6%	4.9%	80.0%	9.7%	10.0%
	Lake	25.1%	10.1%	7.0%	72.2%	7.8%	5.8%
	Leelanau	2.8%	28.1%	2.7%	90.7%	31.4%	25.3%
	Manistee	9.6%	16.4%	5.0%	81.4%	14.2%	13.7%
	Mason	10.1%	23.9%	5.2%	82.7%	15.9%	17.9%
	Mecosta	5.1%	71.5%	5.2%	83.8%	19.1%	18.5%
	Missaukee	10.0%	16.5%	5.9%	78.6%	10.2%	11.6%
	Montmorency	7.3%	16.5%	6.7%	74.8%	8.2%	12.4%

Impact Area	County	Not enrolled in school and not HS graduate	Enrolled in college or graduate school	Less than ninth grade education	HS graduate or higher	BA/BS degree or higher	BA/BS degree or higher
		16-19 years		18-24 years	25 years or older		25 to 34 year
	Newaygo	10.2%	17.2%	6.6%	78.7%	11.4%	12.6%
	Oceana	12.7%	14.7%	7.7%	79.8%	12.6%	11.4%
	Ogemaw	7.5%	20.6%	7.0%	75.0%	9.6%	12.3%
	Osceola	8.6%	16.8%	5.7%	80.5%	11.3%	12.8%
	Oscoda	16.1%	18.7%	7.9%	73.7%	8.0%	5.0%
	Otsego	4.3%	13.3%	3.8%	85.5%	17.4%	19.5%
	Presque Isle	6.5%	24.1%	9.2%	77.0%	11.5%	13.4%
	Roscommon	8.2%	22.0%	4.4%	79.5%	10.9%	11.8%
	Wexford	11.2%	16.8%	4.6%	82.0%	15.3%	16.2%
Michigan	Michigan	8.7%	36.7%	4.7%	83.4%	21.8%	26.0%

Data Source: US Census, 1980, 1990, and 2000

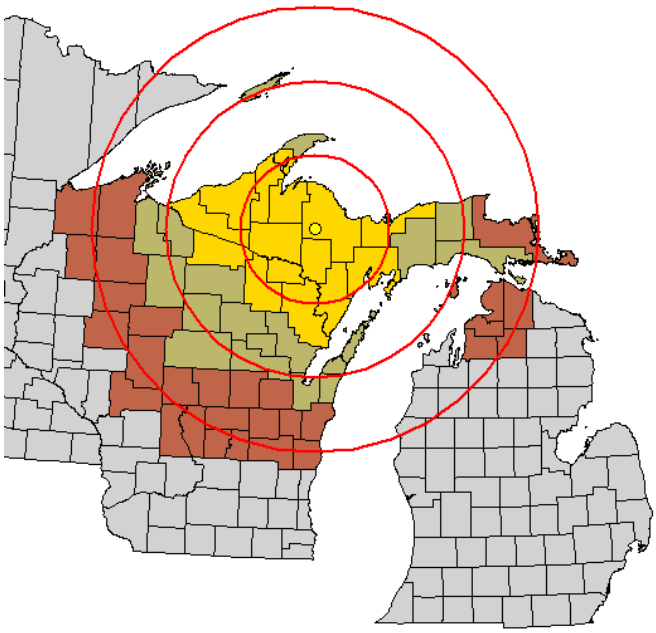

Figure A2.1. Counties within 60, 120, and 180 miles of the state forests in the Western Upper Peninsula state forests.

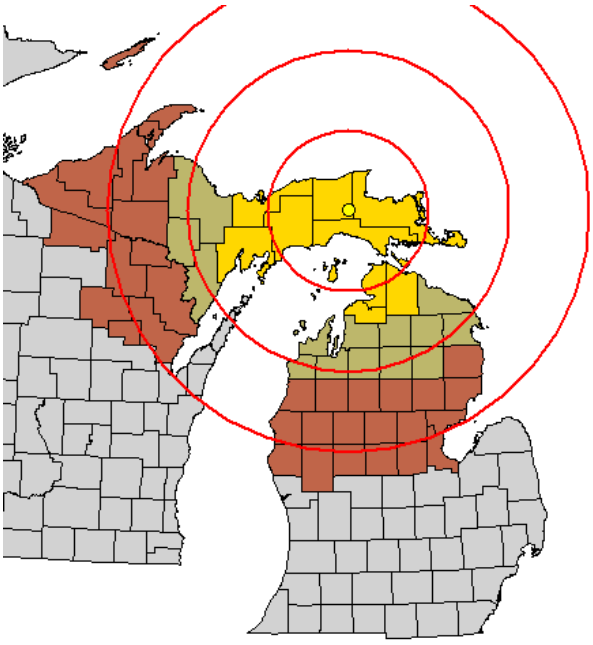

Figure A2.2. Counties within 60, 120, and 180 miles of the state forests in the Eastern Upper Peninsula state forests.

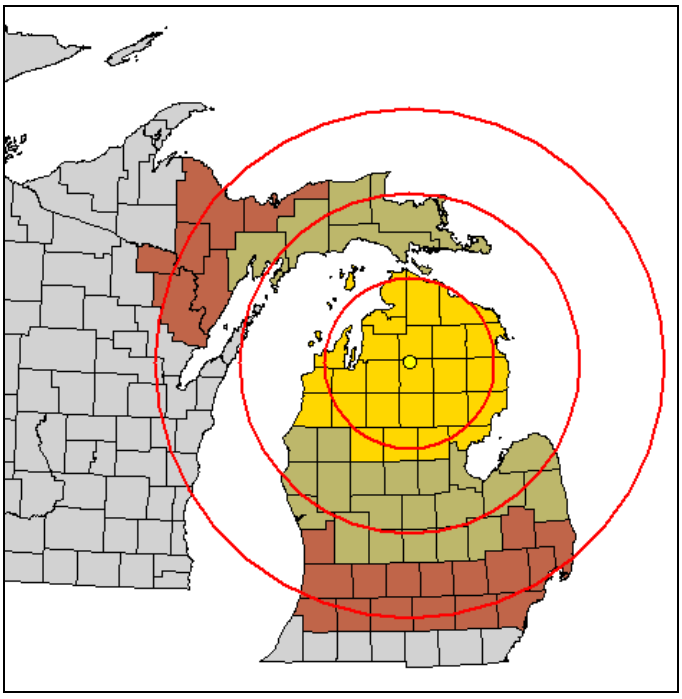

Figure A2.3. Counties within 60, 120, and 180 miles of the state forests in the Northern Lower Peninsula state forests.